

## **Data Used for Plume Area and Volume Estimates**

In the EPA EE/CA and action memo, waste volume estimates were based on the following:

- the estimated main plume area from the Potlatch/Golder EE/CA;
- a conservative estimate of the amount of hot spot contamination on the western part of the property; and
- cross sections of the subsurface plume area, based on visual observations from borehole logs.

The new volume and cost estimates are based on the following new information:

- an expanded boundary of the main plume area, as presented by GeoEngineers in the November 3 meeting;
- results of the GeoEngineers investigation, which better delineated the western hot spots; and
- extrapolation from the estimates and cross sections previously developed for the EPA EE/CA and action memo.

## **Plume Area Calculation Notes**

The following changes are noted in the plume area, as described on a figure provided by GeoEngineers:

- The main plume area is now estimated to be slightly larger than before.
- The area of hot spot contamination in the western half is better delineated and significantly smaller than previously estimated.
- Overall, the area of contamination is estimated to be lower than before.
- Since EPA is basing its estimates on the plume area figure provided by GeoEngineers, we assume that we starting from the same assumptions. However, note that our area calculations are based on estimates from a scanned copy of this figure, and not the underlying CAD/GIS data, so there may be some minor differences between the area values that GeoEngineers is using.

## **Volume Calculation Notes**

- Volume is based on the estimated plume area and the thickness of contaminated soil.
- To calculate subsurface thickness, we developed cross sections of contamination and analyzed in CAD. The presence of contaminated soil was made based on field observations by geologists in field borehole logs from the EPA 2007 and Golder 2009 investigations.
- GeoEngineers reported using a similar approach. However, they were less conservative. Rather than assuming that any field observation of TPH corresponded with contaminated soil requiring removal, they were less selective. We have not seen a written description of their methodology or results, and we can only extrapolate by the total volume that they reported.

-- Since we do not have any new subsurface data that corresponds with the new plume area estimates, we extrapolated the new volume estimates from the previous subsurface CAD cross sections.

-- Our total volume estimate is 48,632 cubic yards ( $\text{yd}^3$ ), and theirs is 31,183  $\text{yd}^3$ . Since we are both probably using the same plume areas, the difference must be thickness. We have an average plume thickness of 6.7 feet, and they have an average thickness of 4.31 feet.

-- Also, when you look at average thickness by property, ours are all the same because we just extrapolated the data (no opportunity to re-analyze subsurface with CAD). However, their thicknesses do differ by property: FWHA = 3.28 feet, Bencik = 5.46 feet, and Potlatch = 4.08 feet.

### **Cost Estimate Notes**

-- We updated our cost spreadsheets (broken out by task and subtask) with the new plume area and volume estimates.

-- Overall, our unit price comes out to \$191.85/ $\text{yd}^3$ . The unit rates vary slightly for each property, but the total spread is less than \$5/ $\text{yd}^3$ .

-- Their overall unit price is \$227.69/ $\text{yd}^3$ , and it is the same for each property. Since it is the same for each property, it looks like they have estimated the cost for the entire project and then applied it to the individual properties by the volume proportion, rather than breaking out by task. However, this may not be that significant as our unit rate by property spread was fairly small.

-- We don't know what their cost assumptions are, or why their unit costs are higher. The higher unit rates could be caused by:

- Assumption that all waste will be disposed of at Wenatchee as PCB-containing;
- Greater impact of fixed costs relative to smaller volume estimate;
- Additional contract management costs; and/or
- Some other factor.